

## METHOD FOR THE GENERATION OF ANTIGEN-SPECIFIC LYMPHOCYTES

### Abstract of the Disclosure

The invention provides systems and methods for the generation of lymphocytes having a unique antigen specificity. In a preferred embodiment, the invention provides methods of virally infecting cells from bone marrow with one or more viral vectors that encode antigen-specific T cell receptors. The resulting lymphocytes, and in particular, T cells express the T cell receptor (TCR) that was introduced. The lymphocytes generated can be used for a variety of therapeutic purposes including the treatment of various cancers and the generation of a desired immune response to viruses and other pathogens. The resulting cells develop normally and respond to antigen both in vitro and in vivo. It is also possible to modify the function of lymphocytes by using stem cells from different genetic backgrounds. Thus the system constitutes a powerful tool to generate desired lymphocyte populations both for research and therapy. The invention may be used in treatments for infectious diseases, such as HIV/AIDS, allergy, autoimmune disease and cancer therapy.

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